

# Conserving Waterfowl & Wetlands In the Great Lakes Amid Climate Change



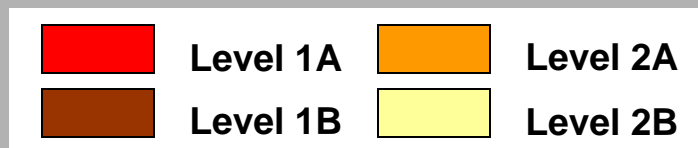
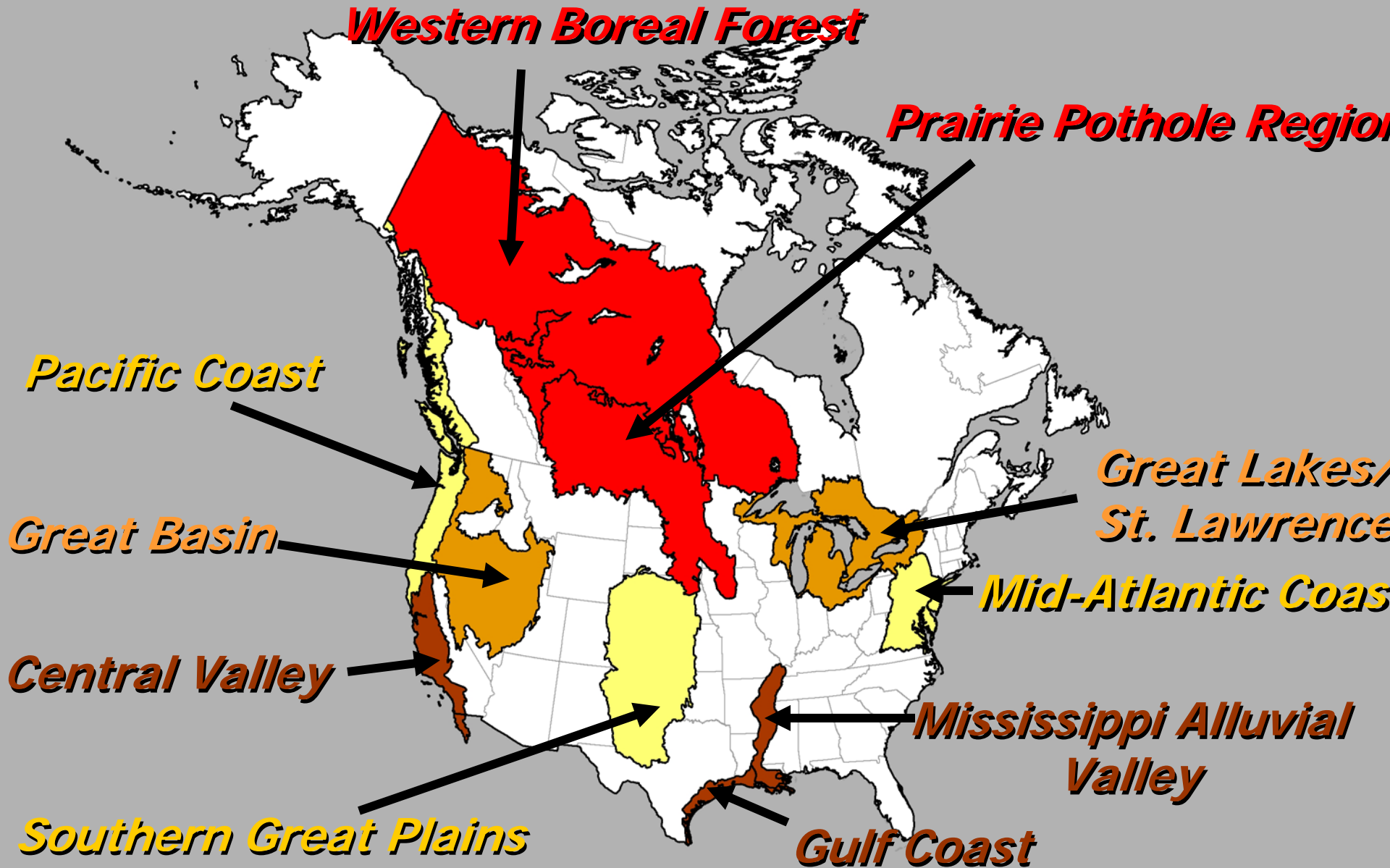
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Great Lakes Atlantic Region

Impact of Climate Change on the Great Lakes Ecosystem  
NOAA Science Needs Assessment Workshop  
July 29 - 31, 2008  
Ann Arbor, MI



# Our Mission

*Ducks Unlimited conserves, restores,  
and manages wetlands and associated  
habitats for North America's Waterfowl,  
other wildlife, and people.*



# The Human Touch



67% Wetland Loss



# Great Lakes Region

- ~ 2.5 million breeding pairs of waterfowl
- ~ 18.3 million fall staging waterfowl
- ~ 7 million spring staging waterfowl (U.S. estimate)
- ~ 1.5 million wintering waterfowl (primarily diving & sea ducks)



**Percentage of Total Soybean Production by State**

State	Percentage	Largest Portion of Harvest
Minnesota	12%	No
Wisconsin	81%	Yes
Illinois	29%	Yes
Indiana	30%	Yes
Michigan	57%	Yes
Ohio	22%	No
Pennsylvania	20%	No
Maryland	20%	No
Virginia	25%	No
North Carolina	23%	Yes
South Carolina	25%	Yes
Georgia	27%	Yes
Alabama	20%	No
Mississippi	14%	No
Louisiana	16%	No
Texas	20%	No

\* = largest portion of the harvest

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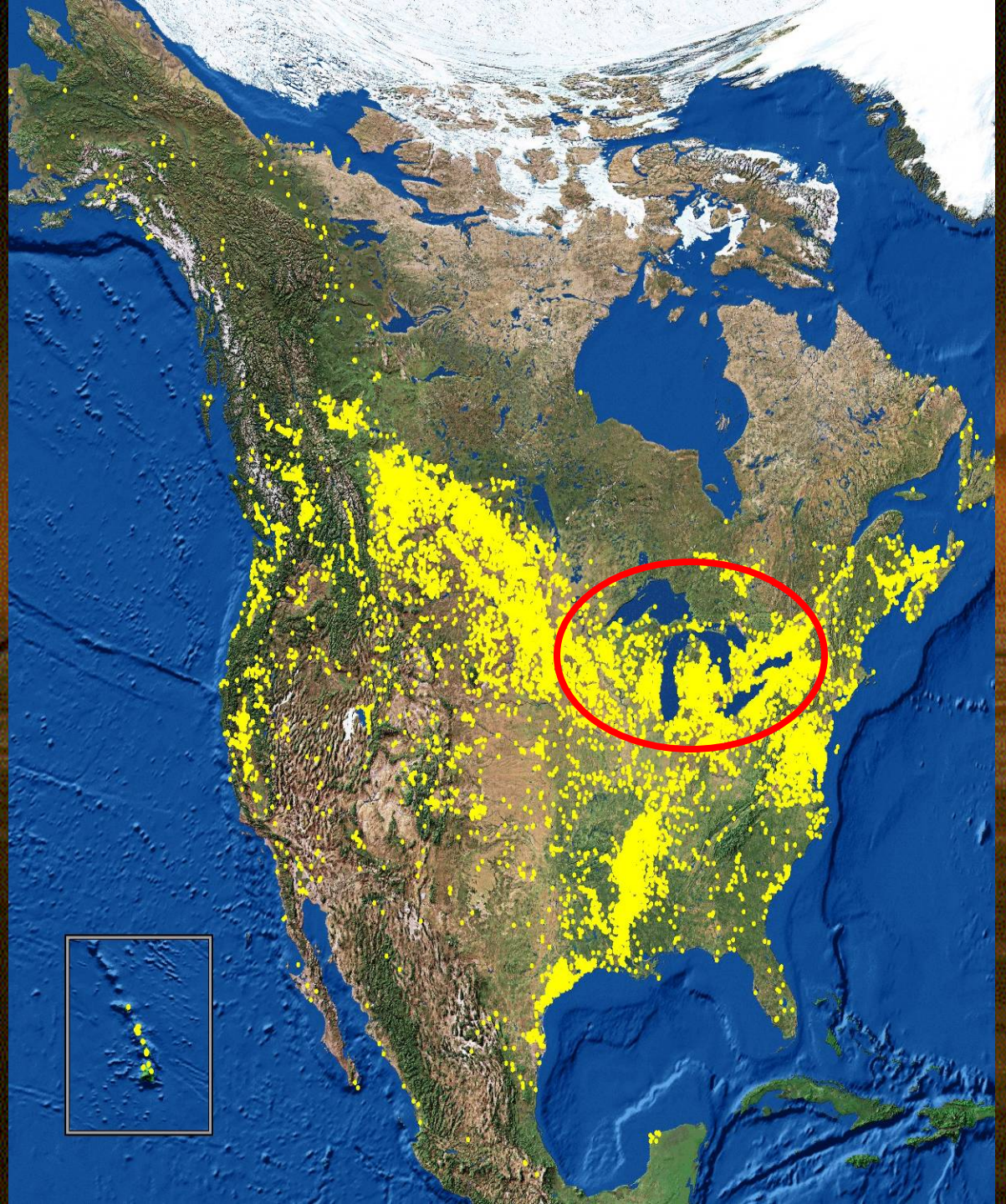
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- = DU projects



# Why IS DU Concerned About Climate Change?

Because of the predicted impacts on shallow-water wetland habitats upon which waterfowl depend

# Climate Change Will Affect Wetlands Via:

- Sea level rise
- Changes in lake levels & river flows
- Changes in hydrology and hydroperiod
- Increased air, soil & water temperature
- Favoring more invasive species
- Changes in precipitation patterns
- More intense weather events
- Reduced snow cover, glaciers & permafrost
- Human land use changes
- Human water consumption patterns

# Why IS DU Concerned About Climate Change?

Although most North American waterfowl are migratory, they may be substantially affected because the shallow-water habitats they rely upon are particularly sensitive to inter-annual and intra-annual changes in water budgets

# Impacts on Waterfowl

- Population declines as a result of variable/reduced breeding, migration and wintering habitat
- Shifts in the distribution of breeding, migrating, and wintering waterfowl
- Changes in the timing of migration

# Impacts on Recreation & Associated Revenue

Consumptive and non-consumptive use of the waterfowl resource is big business and any major changes to the resource will have a significant impact on that business

# Economics and Waterfowl

- 1.8 million waterfowlers spend 30 million days pursuing waterfowl
- Expend nearly \$1 billion annually on trips and equipment
- Total economic output of \$2.3 billion, 21,415 jobs, \$725 million in employment income, and over \$330 million in taxes
- Much of the revenue for conservation of important waterfowl habitats comes from waterfowlers
- 46 million+ birders in the U.S.

# Responding to Climate Change

- Provide widely distributed source areas to buffer the impacts of climate change ("keep the table set")
- Manage for resilience; conservation of habitat complexes that include a variety of wetland permanence classes
- Securing water rights to ensure availability for managed wetlands
- Consider climate change impacts in conservation planning (e.g. sea level rise)
- Policy efforts to reduce existing environmental stresses on wetlands and associated habitats
- Policy efforts to expand support for wetland conservation
- Reach out to climate change science community

# Information Needs

- Assess sensitivity and predicted response of Great Lakes coastal and inland wetlands to climate change (extreme events & variability)
- An understanding of how climate change is predicted to impact the temporal and spatial availability of wetlands required for breeding, migrating & wintering waterfowl
- Understand how changes in waterfowl abundance and distribution as a result of climate change will impact hunter participation and revenue generated from recreational hunting
- Need to understand the interaction of climate change with population growth, and food, water & energy demands (e.g. other stressors on wetlands)
- A greater ability to predict and measure landscape change

*Maintaining the capacity  
of the Great Lakes  
ecosystem to sustain  
waterfowl is  
daunting..... even  
without the added  
challenges of climate  
change*

# Thank You For Listening

